

What is claimed is:

1. Pattern forming materials comprising:
a thermal sensitive material layer formed on a target substrate;
a first light-to-heat converting layer formed between the thermal
5 sensitive material layer and the target substrate; and
a second light-to-heat converting layer formed on a surface of the
thermal sensitive material layer opposite to the first light-to-heat
converting layer,
wherein the thermal sensitive material layer is interposed between
10 the first and second light-to-heat converting layers.
2. The pattern forming materials of claim 1, wherein the first
and second light-to-heat converting layers absorb activation light radiated
thereon and convert the absorbed activation light into heat.
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3. The pattern forming materials of claim 2, wherein the first
and second light-to-heat converting layers comprise a Ge-Sb-Te alloy.
4. The pattern forming materials of any one of claims 1
20 through 3, wherein the thermal sensitive material layer is rendered
soluble or insoluble in a developing solution when irradiated further by
another activation light.
5. The pattern forming materials of claim 4, wherein the
25 thermal sensitive material layer after heat is generated in the first and
second light-to-heat converting layers by activation light irradiation is no
longer rendered soluble in the developing solution when irradiated further
by another activation light.
- 30 6. The pattern forming materials of claim 4, wherein the
thermal sensitive material layer is rendered insoluble in the developing
solution by the heat generated in the first and second light-to-heat

converting layers by activation light irradiation.

7. The pattern forming materials of claim 5, wherein the thermal sensitive material layer is made of a positive type photoresist.

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8. The pattern forming materials of claim 6, wherein the thermal sensitive material layer is made of a negative type photoresist.

9. The pattern forming materials of any one of claim 1 through
10 8, further comprising at least one thermal protective layer between the second light-to-heat converting layer and the target substrate.

10. The pattern forming materials of claim 9, wherein the thermal protective layer is a substrate protective layer formed between
15 the first light-to-heat converting layer and the target substrate.

11. The pattern forming materials of claim 9 or 10, wherein the thermal protective layer is a thermal buffer layer formed between the thermal sensitive material layer and the first light-to-heat converting
20 layer.

12. The pattern forming materials of any one of claims 9 through 11, wherein the thermal protective layer is a thermal buffer layer formed between the second light-to-heat converting layer and the
25 thermal sensitive material layer.

13. The pattern forming materials of any one of claim 1 through 12, further comprising a cap layer on the second light-to-heat converting layer.

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14. A method of forming a pattern using the pattern forming materials of any one of claims 1 through 13.

15. A method of forming a pattern using pattern forming materials including a thermal sensitive material layer formed on a target substrate, a first light-to-heat converting layer formed between the 5 thermal sensitive material layer and the target substrate, and a second light-to-heat converting layer formed on a surface of the thermal sensitive material layer opposite to the first light-to-heat converting layer, the thermal sensitive material layer being interposed between the first and second light-to-heat converting layers, the method comprising:
- 10 (a) radiating activation light onto the first and second light-to-heat converting layers to generate heat therein and change a pattern portion of the thermal sensitive material layer by the heat; and
- (b) removing a non-pattern portion of the thermal sensitive material layer.
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16. The method of claim 15, further comprising radiating another activation light onto the thermal sensitive material layer after the pattern portion has been changed.
- 20 17. The method of claim 15, further comprising radiating another activation light onto the thermal sensitive material layer before step (a).
- 25 18. The method of any one of claims 15 through 17, wherein the thermal sensitive material layer is made of a positive type photoresist.
19. The method of claim 15, wherein the thermal sensitive material layer is made of a negative type photoresist.

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